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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,830	09/25/2003	Minoru Usui	448563/0231	7331

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EXAMINER

HSIEH, SHIH WEN

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. K	Applicant(s)	
	10/670,830	USUI ET AL.	
	Examiner	Art Unit	
	Shih-wen Hsieh	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/040,238.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9-25-03; 7-19-04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 17 is objected to because of the following informalities:

Please change "The selective ink supply system" in line 1 into " A selective ink supply system".

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 3 of U.S. Patent No. 6,648,459 B2 ('459). Although the conflicting claims are not identical, they are not patentably distinct from each other because both cases deal with a valve in ink supply

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channel. Below is a table of comparison between claims in the instant application and the patent ('459) to show their likeness:

<u>10/670,830</u>	<u>6,648,459 B2</u>
1. A valve unit to be arranged in an ink supply channel of an ink recording apparatus, the valve unit comprising: an entry port constructed to receive an ink needle and supply ink to the ink needle for use in recording; a valve mechanism adapted to be disposed in the ink supply channel defining an upstream side and a downstream side in the ink supply channel; said valve unit constructed to selectively permit and prevent the flow of ink without being pierced by the ink needle; and a filter disposed upstream from the valve mechanism.	1. A valve unit discrete from an ink cartridge and capable of being located between the ink cartridge containing an ink and a recording head, the valve unit comprising: an ink supply needle; and a valve mechanism located downstream of the ink supply needle, wherein the valve mechanism opens at a pressure that is greater than a pressure exerted on the valve mechanism just by the ink in the ink cartridge. 3. A valve unit as in claim 1, further comprising a filter that is in fluid communication with the valve mechanism.

Since the instant application is related to patents 6,648,459 and 6,302,531, and all of them deal with a valve unit, therefore, the subject matters and limitations of this valve unit among these cases should be recited similarly so as not to deviate from the spirit of the invention. Based on the above point of view, the comparison work is easy. Upon viewing the table above, the subject matters such as ink needle, valve mechanism and filter are the same.

The differences are:

- 1) an entry port constructed to receive an ink needle and supply ink to the ink

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needle for use in recording recited in the instant application was not recited in patent (459).

As this is a well known fact that a hollow needle used to pierce a subject matter, and in ink cartridge case, to pierce a film or diaphragm disposed in an ink cartridge so as to allow the needle in fluid communication with the ink contained in the cartridge and supply ink from the cartridge through the hollow needle to the ink jet head, the place where the hollow needle pierce the cartridge is the entry port, refer to MPEP 2144.03, In re Malcolm, 129 F.2d 529 54 USPQ 235 (CCPA 1942).

Therefore it would have been an obvious matter that when a hollow needle is used to supply ink to the ink jet head, the hollow needle has to penetrate into the cartridge to make fluid communication with the ink inside the cartridge, the place of penetration is the entry port.

2) as to "said valve unit constructed to selectively permit and prevent the flow of ink without being pierced by the ink needle" in the instant application, this is obvious.

Because a valve is a control device, when a valve is placed in the path of a fluid, its function is to regulate the flow of the fluid. The valve can either partially or completely blocks or allows the flow of fluid in the path where the valve is placed. A globe valve, or a gate valve can achieve the afore-discussed function.

Since the above discussion for the recitation in claim 1 of the instant application is the obvious function of a valve, it is therefore no motivation or references to be discussed in this aspect.

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4. Claim 2 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,648,459 B2 ('459). Although the conflicting claims are not identical, they are not patentably distinct from each other because both cases deal with a valve in ink supply channel. Below is a table of comparison between claims in the instant application and the patent ('459) to show their likeness:

<u>10/670,830</u>	<u>6,648,459 B2</u>
2. A valve unit to be arranged in an ink supply channel of an ink recording apparatus, the valve unit comprising: a valve mechanism adapted to be disposed in the ink supply channel defining an upstream side and a downstream side in the ink supply channel; and a filter disposed upstream from the valve mechanism; wherein the valve mechanism is constructed to selectively open and close the ink supply channel as a result of a change in the pressure difference between the upstream side and the downstream side of the valve mechanism.	1. A valve unit discrete from an ink cartridge and capable of being located between the ink cartridge containing an ink and a recording head, the valve unit comprising: an ink supply needle; and a valve mechanism located downstream of the ink supply needle, wherein the valve mechanism opens at a pressure that is greater than a pressure exerted on the valve mechanism just by the ink in the ink cartridge. 3. A valve unit as in claim 1, further comprising a filter that is in fluid communication with the valve mechanism.

The discussions for the table above are the same as those for claim 1 discussed above, except claim 2 of the instant application has the limitation of how the valve is open or closed.

In this respect, the opening or closing of a valve has a number of ways. By pressure difference as used in this application implies a diaphragm valve. A diaphragm

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valve used widely in industry. Generally a pneumatic actuator disposed with the valve, and the pressure generally comes from e.g., an air compressor, which is connected to the actuator. The control of the compressor controls the operation of the valve. In the instant application, change in the pressure difference between the upstream side and the downstream side of the valve mechanism corresponds to the compressor.

Therefore, so long as a valve is mentioned in the claim, the manner in which as to how the valve is functioned carries less patent weight, refer to MPEP 2114 "Manner of operating the device does not differentiate apparatus claim from the prior art".

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 3-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Suga et al. (US Pat. No. 4,514,742).

In regard to:

Claim 3:

Suga et al. teach:

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A valve unit (401, fig. 4) to be placed in an ink supply channel of an ink-jet recording apparatus (fig. 1), the ink supply channel having an upstream portion and a downstream portion, the valve unit comprising:

a partition wall (404, fig. 4) which, when the valve unit is placed in the ink supply channel, is located between the upstream portion and the downstream portion, the partition wall having an upstream side and a downstream side and a plurality of communication holes (402, fig. 4) passing therethrough, each said communication hole providing fluid communication between the upstream portion and the downstream portion, refer to fig. 4B for flow direction; and col. 6, line 56 to col. 7, line 5; and

a diaphragm valve (401, fig. 4), comprising,

a valve seat (406, fig. 4) formed on the downstream side of the partition wall, and a flexible diaphragm (401, fig. 4), the diaphragm having an opening (refer to fig. 4C, the opening is not numbered) therethrough, the flexible diaphragm being mounted so that the opening presses against the valve seat (as shown in fig. 4A) until a pressure difference across the valve reaches a predetermined value (as shown in fig. 4B), refer to col. 6, line 56 to col. 7, line 13.

Claim 4:

Suga et al. further teach:

wherein at least a first and a second of the communication holes are located on opposite sides of the valve seat, refer to fig. 4C, the left one and the right one can be said at opposite sides of the valve seat.

Claim 5:

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Suga et al. further teach:

wherein the first and the second communication holes and the valve seat all lie on a line, refer to fig. 4C.

Claim 6:

Suga et al. further teach:

wherein the valve seat is kept in elastic contact with the opening, refer to col. 6, lines 65-66.

Claim 7:

An ink cartridge comprising:

a container;

a partition wall disposed within the container and dividing the container into an upper portion defining an ink chamber and a lower portion, the partition wall having an upstream side and a downstream side and a plurality of communication holes passing therethrough, each said communication hole providing fluid communication between the upstream portion and the downstream portion; and

a diaphragm valve, comprising,

a valve seat formed on the downstream side of the partition wall, and

a flexible diaphragm, the diaphragm having an opening therethrough, the flexible diaphragm being mounted so that the opening presses against the valve seat until a pressure difference across the valve reaches a predetermined value.

Rejection:

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For container, the configuration shown in fig, 4A and 4B can be seen as the container, and the valve is placed in the container to control the ink flow.

For partition and diaphragm valve, which are rejected on the basis as set forth for claim 3 discussed above.

Claim 8:

wherein at least a first and a second of the communication holes are located on opposite sides of the valve seat.

Rejection:

This claim is rejected on the basis as set forth for claim 4 discussed above.

Claim 9:

wherein the first and the second communication holes and the valve seat all lie on a line.

Rejection:

This claim is rejected on the basis as set forth for claim 5 discussed above.

Claim 10:

wherein the valve seat is kept in elastic contact with the opening.

Rejection:

This claim is rejected on the basis as set forth for claim 6 discussed above.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butschon (US Pat. No. 6,010,211).

In regard to:

Claim 1:

Butschon teaches:

A valve unit to be arranged in an ink supply channel of an ink recording apparatus, the valve unit comprising:

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an entry port (at the location of numeral 15) constructed to receive an ink needle and supply ink to the ink needle for use in recording, refer to col. 2, lines 37-40;

a valve mechanism (24 and 17) adapted to be disposed in the ink supply channel defining an upstream side and a downstream side in the ink supply channel;

said valve unit constructed to selectively permit and prevent the flow of ink without being pierced by the ink needle, refer to col. 2, line 37 to col. 3, line 4.

The device of Butschon DIFFERS from claim 1 in that it does not teach:

a filter disposed upstream from the valve mechanism.

a filter disposed upstream from the valve mechanism is well known in the art, refer to MPEP 2144.03, In re Malcolm 129 F.2d 529, 54 USPQ 235 (CCPA 1942).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the device of Butschon to include a filter as most of the ink cartridge has a filter for the purpose of filtering out debris contained in the ink and not allowing them going into ink jet head.

Claim 2:

A valve unit to be arranged in an ink supply channel of an ink recording apparatus, the valve unit comprising:

a valve mechanism adapted to be disposed in the ink supply channel defining an upstream side and a downstream side in the ink supply channel; and

a filter disposed upstream from the valve mechanism;

wherein the valve mechanism is constructed to selectively open and close the

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ink supply channel as a result of a change in the pressure difference between the upstream side and the downstream side of the valve mechanism.

Rejection:

This claim is rejected on the basis as set forth for claim 1 discussed above.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 11-24 are rejected under 35 U.S.C. 103(a) as being obvious over Betschon (US Pat. No. 6,010,211) in view of Suga et al.

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The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2). Both cases deal with a valve disposed in an ink supply channel.

In regard to:

Claim 11:

Betschon teaches:

An ink tank unit (1) for detachable mounting on a connecting member of an inkjet recording apparatus and which can contain an ink, the ink tank unit comprising:

a container (5) having a partition wall (17) that defines and separates a first ink accumulating chamber (5 and 6) and a second ink accumulating chamber (18), the partition wall having an upstream side facing the first ink accumulating chamber and a downstream side facing the second ink accumulating chamber, said partition wall having a hole (19) allowing fluid communication between the first ink accumulating chamber and the second ink accumulating chamber;

a diaphragm (24) opposing the downstream side of the partition wall and defining a third ink accumulating chamber (not numbered in the only one figure, however, this third place is above the membrane 24 and below the wall 17) between said diaphragm and said partition wall and located within said second ink accumulating chamber, said diaphragm having an opening (36);

a projection (37) formed on the downstream side of the partition wall and aligned with and against said opening so that when a part of the diaphragm moves away from the partition wall said opening is not blocked; and

an ink supply port (the place where the sealing plug is disposed) leading to the second ink accumulating chamber and through which, when the ink tank unit contains ink, ink flows from the second ink accumulating chamber to the ink-jet recording apparatus, refer to col. 2, lines 15-60.

The device of Butschon DIFFERS from claim 11 in that it does not teach:

said partition wall having a plurality of communication holes.

Suga et al. teach in their fig. 4 a doughnut-shaped disc valve (401), made of an elastic member that can be deformed by pressure (as shown in fig. 4A and fig. 4B), and

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functioned as a membrane, Suga et al. also teach a valve seat (404), also functioned as a partition wall having a plurality of ports (402) allowing ink flows from upstream side to the downstream side (as shown in fig. 4B, the ink flow is indicated by curved arrow), refer to col. 6, line 56 to col. 7, line 13.

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the device of Butschon to include more than one port (corresponding to the communication holes in the instant application) as taught by Suga et al. for the purpose of allowing ink flowing from upstream side of the valve to the downstream side of the valve more rapidly due to the increasing of the communication holes.

Claim 12:

Butschon further teach:

wherein said projection is an integral protrusion of said partition wall, refer to the only one drawing.

Claim 13:

Butschon further teach:

wherein a distal end face of said projection contacts a part of said diaphragm surrounding said opening, refer to the only one drawing.

Claim 14:

wherein at least a first and a second of the communication holes are located on opposite sides of the projection.

Rejection:

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This claim is rejected on the basis as set forth for claim 4 discussed above.

Claim 15:

wherein the first and the second communication holes and the projection all lie on a line.

Rejection:

This claim is rejected on the basis as set forth for claim 5 discussed above.

Claim 16:

wherein the projection is kept in elastic contact with the opening.

Rejection:

This claim is rejected on the basis as set forth for claim 6 discussed above.

Claim 17:

A selective ink supply system to be located in an ink container between an ink chamber containing an ink and an ink supply port downstream of the ink chamber through which the ink flows to an ink-jet recording apparatus upon which the ink container is detachably mounted, said system comprising:

a wall having an upstream side, a downstream side, and a plurality of communication holes allowing fluid communication between the upstream and downstream side;

a projection formed on the downstream side of the wall; and

a diaphragm opposing the downstream side of the wall, said diaphragm having an opening that is aligned with said projection, said diaphragm being urged against the

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projection so that the opening is blocked, the diaphragm separating from said projection when a pressure difference across the diaphragm exceeds a particular value.

Rejection:

This claim is rejected on the basis as set forth for claim 11 discussed above. Specifically, 38 is the urging spring, which urges the membrane (24) abutting the protrusion (37) so as to prevent the ink flowing through the bore 36 to the ink jet head.

Claim 18:

Butschon further teach:

wherein said projection contacts said diaphragm to define a space therebetween, refer to the drawing, this space is like a triangle, and also called the third ink accumulating chamber in claim 11.

Claim 19:

Butschon further teach:

wherein an outer periphery of said diaphragm is pressed against said wall, refer to col.2, lines 49-55.

Claim 20:

wherein at least a first and a second of the communication holes are located on opposite sides of the projection.

Rejection:

This claim is rejected on the basis as set forth for claim 4 discussed above.

Claim 21:

wherein the first and the second communication holes and the projection all lie on a line.

Rejection:

This claim is rejected on the basis as set forth for claim 5 discussed above.

Claim 22:

wherein the projection is kept in elastic contact with the opening.

Rejection:

This claim is rejected on the basis as set forth for claim 6 discussed above.

Claim 23:

Butschon further teach:

wherein, when the selective ink supply system is located in the ink container, the communication holes are in fluid communication with the ink chamber, and said opening is in fluid communication with the ink supply port, refer to col. 2, line 37 to col. 3, line 4.

Claim 24:

Butschon further teach:

wherein, when the selective ink supply system is located in the ink container, the ink flows from the ink chamber through the communication holes and then through the opening to the ink supply port, refer to col. 2, line 37 to col. 3, line 4.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-wen Hsieh whose telephone number is 571-272-2256. The examiner can normally be reached on 7:30AM -5:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Talbott can be reached on 571-272-1934. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SHIH-WEN HSIEH
PRIMARY EXAMINER

S. Hsieh 1-03-05
Shih-wen Hsieh
Primary Examiner
Art Unit 2861

SWH

mmf
Jan. 13, 2005